

2.2 Polynomial Identities & Factoring

Name _____ Date _____ Period _____

Expand the product using polynomial identities. Write the identity used. Show work!

1. $(x-2)(x+5)$

2. $(3x-y)(3x+y)$

3. $(3x+4y)^2$

4. $(u+3v)^3$

5. $(\sqrt{u}+\sqrt{v})(\sqrt{u}-\sqrt{v})$

6. $(x-2)(x^2+2x+4)$

Factor each expression using the polynomial identities. Write the identity used. Show work!

7. $64-25y^2$

8. $y^2+8y+16$

9. $27y^3-8$

10. $x^2+9x+14$

Use the quadratic formula to solve each equation. Show work!

11. $x^2-5x-7=0$

12. $3x^2-4x+3=0$

Expand each expression using polynomial identities and complex numbers. Show work!

13. $(x+5i)^2$

14. $(x+3i)(x-3i)$

Factor each expression over the complex numbers. Use identities if needed. Show work!

15. $4x^2+49$

16. $x^2-10x+26$

Factor each polynomial completely. Look for GCF first, then identify whether it is a polynomial identity. Factor accordingly. Show work!

17. $3k^2-24k-60$

18. $36xy+48x-6ky-8k$

19. $6n^3-3n^2$

20. $20b^2+156b+216$

21. $7n^2+61n-18$

22. $6u^4-6u^2-540$

23. r^2-100

24. $32a^2-18b^2$

$$25. 245y^2 + 350yx + 125x^2$$

$$26. 1 + x^3$$

$$27. 1 - 125x^3$$

$$28. 1 + 64x^6$$

Solve each equation by factoring. Show work!

$$29. x^2 - x - 90 = 0$$

$$30. 5x^2 + 10x = 0$$

Practice Review Problems

Simplify each expression using the correct operation. Show work!

$$31. (x^2 + 2x - 7) + (-3x^2 - 5x + 10)$$

$$32. (x - 3)(x^2 - 2x + 4)$$